A PROFILE OF DIAGNOSIS AND

MANAGEMENT OF ANO RECTAL FISTULAE

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CERTIFICATE

Certified that this dissertation is the bonafide work of **S.Suja** on **A Profile of diagnosis and management of Anorectal fistulae** during his M.S (General surgery) course from May 2006 to March 2009 at Government kilpauk medical college hospital and Government Royapettah hospital , Chennai. This has been submitted in partial fulfillment of the award of M.S Degree in General surgery (Branch-I) by the Tamilnadu Dr. M.G.R. Medical University , Chennai – 600032.

PROF.G.GUNASEELAN M.S,
PROFESSOR AND HEAD OF THE DEPT
DEPARTMENT OF SURGERY
KILAPUK MEDICAL COLLEGE
CHENNAI -10

PROF.P.RAVI M.S,
PROFESSOR AND UNIT-I CHIEF
DEPARTMENT OF SURGERY
KILPAUK MEDICAL COLLEGE
CHENNAI-10

Prof.Dr.M.DHANAPAL M.D., D.M.,
THE DEAN
Government kilapauk medical college and hospital
Chennai -10

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CONTENTS

INTRODUCTION

Anorectal fistulae are one of the most common and complex problems in anorectal surgery. The site of the disease frequently prevents the patient from seeking early and proper medical care. The chronicity of the disease associated with the nature of the symptoms, which include purulent discharge, staining of clothes, repeated abscess formation makes a healthy person to lose his confidence, and at times his ability to work. This psychosocial morbidity in a healthy person forms the other important aspect of the disease. The incomplete and inefficient treatment of this disease, frequently by non-medical people has resulted in recurrence of the disease and worse, unwanted complications. The need for per-rectal and proctoscopic examination and probing to assess the correct status of the disease so often comes in the way of proper care to the patient and acceptance of the treatment by the patient.

The last few decades has seen tremendous progress in understanding the nature of the disease, which in turn has led to better management.

The delineation of the anatomy of the rectum and anal canal and the proper understanding of the function of the physiology of continence has helped in management of the disease. This understanding has enabled the

surgeon to sacrifice the sphincters keeping the anorectal ring intact and thus eradicating the disease.

The improved techniques of surgery have contributed for the radical treatment, short convalescence and prevention of recurrence.

The methods of primary closure, primary grafting and secondary grafting has revolutionized fistula-in-ano surgery have reduced the recovery time following surgery. These methods can be adopted due to the availability of antibiotics and methods of gut sterilisation.

There are also newer techniques in treatment of fistula-in ano, which include injection of fibrin glue / surgisis AFP insertion into the fistulous tract.

This dissertation consists of review of literature and study of cases of fistula-in-ano admitted to Govt. Royapettah Hospital, Royapettah, Chennai with a view to assess etiology, pathology, and treatment and follow up of patients.

OBJECTIVES

The objectives of the study are;

1. To study the various etio-pathological factors of fistula-in-ano

2. To study the various modalities of treatment of fistula-in-ano and the complications associated with them.

REVIEW OF LITERATURE

ANATOMY OF THE ANO-RECTAL REGION

It is essential to have a detailed knowledge of the anatomy of the ano rectal region for successful treatment of fistula in ano.Though the anatomists of 19th and 20th century have described the anatomy of the region in great detail, the description was purely academic. This stimulated Milligan and Morgan to undertake the study and their work forms the basis for the present day anorectal surgery.

.**ANAL CANAL**: The anal canal begins at the termination of the ampulla of the rectum. It is about 3.8cm in length in adults In the normal subjects the anal canal is empty at the state of rest due to the sphincteric tone and the canal has the shape of an antero posterior longitudinal slit. It is of greatest importance surgically because of its role in rectal incontinence.

The upper half of the anal canal is lined by mucus membrane, while the lower half is covered by modified skin, the junction of the two being marked by the line of anal valves approximately 1.5cm from the anal orifice and opposite the junction of the middle and lower third of internal sphincter. This level is referred to as the **Dentate line or the Pectinate line.**

Below the pectinate line for about 1.5cm the anal canal appears thin, smooth, pale and stretched and is known as **transitional zone of pecten**. The transitional zone ends below at a narrow wavy zone called, **white line of Hilton.** On digital palpation the anal intersphincteric groove can be felt at this site. The lower 8mm of the anal canal is lined by true skin and contains sweat and sebaceous glands.

In the region of the anal sinus, **the anal glands** extending upwards or downwards into the submucosa and sphincters can be seen. There are 4-8 glands in the anal canal.The ducts open into a small depression called the anal crypt. The glands are surrounded by lymphocytes in a manner resembling lymphatic follicles, which are termed as **anal tonsil**. The muscles in the submucous plane are thick in their vicinity. At times when the ducts are not canalized the pent up secretions form a cyst. The cyst can get infected forming an abscess, which in turn can lead to a fistula. The glands vary widely in their number and in their depth of penetration and extend even to the submucosa above the ano-rectal junction. It is known that the glands penetrate the internal sphincter extending into the longitudinal muscle layers in about. 50% of the population. No branch extends from the longitudinal layer into the external sphincter. The glands are important clinically in understanding the pathogenesis and morbid anatomy of fistula-in-ano

ANUS: The anus or the anal orifice is the lower aperture of the anal canal and is situated 4cm below and in front of the coccyx between the glutei. The skin of the anus is pigmented and thrown into folds, which converge towards the orifice and are continued into the lower part of the anal canal. A ring of large apocrine glands is found in the perineum

MUSCULATURE OF THE ANAL CANAL: The classical and lucid description of Milligan and Morgan form the foundation of modern teaching of anorectal anatomy. According to them the external sphincter consists of three parts; the subcutaneous, the superficial and the deep. The longitudinal muscle fibres of the rectal wall are prolonged downwards forming an intermuscular septum between the external and internal sphincters. This intermuscular septum divides at the lower margin of the internal sphincter into two parts:

(i) The outer one runs laterally between the subcutaneous and superficial parts of the external sphincter to become continuous with the fascial septa separating the ischio-rectal and the perianal spaces.

(ii) The inner one runs medially between the external and internal sphincters to the skin fixing the anal canal below the muco-cutaneous junction.

They thought that the subcutaneous part of the external sphincter forms a ring of muscle without attachment and was clearly demonstrable during clinical examination and surgical dissection. They thought part of the external sphincter was important in the causation of fissure-in-ano.

INTERNAL ANAL SPHINCTER: At the anorectal junction the unstriped circular muscle coat below the rectum becomes considerably thickened to form the internal sphincter. Inferiorly it ends with a well-defined rounded edge, about 0.8 cm above the anal orifice and 1.25cm below the White line of Hilton. Internal sphincter is composed of apparently separate bundles.

EXTERNAL ANAL SPHINCTER: The external anal sphincter is a cylindrical muscle surrounding the anal canal and when traced upwards on the lateral sides, becomes continuous with the pubo-rectalis and pubo-coccygeus muscles.

It has three parts. 1. Deep , 2. Superficial , and 3. Subcutaneous

LONGITUDINAL MUSCLE FIBRES: the main layer of the longitudinal muscle fibres in the anal canal is seen to lie between the between the external and internal sphincters. This layer consists of non-striped muscle fibres with elastic tissue. Traced upwards it becomes continuous with longitudinal muscle layer of rectum.

LEVATOR ANI MUSCLES: This muscle constitutes a part of the sphincter mechanism of the anal canal. They are broad thin muscles attached peripherally to the inner surface of the side of the pelvis and medially meets the muscle of the opposite side to form the floor of the pelvic cavity. Each muscle has 3 parts:

(i) Ilio-coccygeus

(ii) Pubo-coccygeus

(iii) Pubo-rectalis: arises from the lower part of the back of the pubis, and the superior fascia of the uro-genital diaphragm. It runs backwards along the side of the ano-rectal junction and unites with the corresponding muscle from the opposite side

immediately **posterior to the ano-rectal junction to form a 'U' shaped loop**, **which slings from the rectum to the pubis.**

ANO-RECTAL RING: The term ano-rectal ring was coined by Milligan and Morgan. It denotes the ring of muscle surrounding the ano-rectal junction. It is formed by the upper border of the external and internal sphincters, which completely encircle the junction, and on the lateral and posterior aspects of the pubo-rectalis ring. If the ring is preserved there will be no incontinence even when the rest of the sphincter musculature is cut.

BLOOD SUPPLY OF RECTUM AND ANAL CANAL

(1) Superior rectal artery, which is the main artery, is the continuation of the inferior mesenteric artery

(2) Middle rectal arteries- each of them arises from the anterior division of the internal iliac artery.

(3) Inferior rectal arteries- arise from the internal pudendal artery

(4) The median sacral artery is a small vessel, which arises from the back of the aorta just above its bifurcation.

VEINS OF THE RECTUM AND ANAL CANAL

i. Superior rectal vein continues upwards as the inferior mesenteric vein.

ii. Inferior rectal veins drain the lower part of the anal canal.

iii. Middle rectal veins begin in the submucosa of the rectal ampulla and mainly drain that part of the rectal wall.

LYMPHATIC DRAINAGE OF ANAL CANAL:

Upper half of anal canal goes to **internal iliac nodes** along with lower rectal lymphatics.Lower half of anal canal goes to inguinal lymph nodes.

THE NERVE SUPPLY OF THE ANAL CANAL:

Internal sphincter composed of longitudinal , non-striated , involuntary muscle supplied by **autonomic nerves**.**External sphincter** composed of striated voluntary muscle supplied by **pudental nerve.**The **levator ani** muscles are supplied by the **fourth sacral nerve** on the pelvic surface and by the perineal branches of the **pudendal nerve** on the perineal surface.

The lower part of the anal canal below the anal valves has a rich sensory innervation. Anal canal above the anal valve has much less critical sensation .

CLASSIFICATION

Anorectal fistulae are classified based on morbid anatomy. Milligan and Morgan ,Charles and Smith , Amitlal Som Farqharson Miles , had classified fistula in ano. But they are not used now.

Fistula in ano has been classified on both the vertical axis and horizontal axis. The most important being the classification of the fistulae in the vertical axis in relation to the ano-rectal ring.

In the vertical axis Goligher classified it as follows which is widely followed:

1. Perianalfistulae:	a) Subcutaneous fistula
	b) Low anal fistula
	c) High anal fistula
2. Ano-rectal fistulae	a) Pelvi-rectal fistulae

b) Ischio-rectal fistulae

3. Sub-mucous fistulae

4. **Horseshoe fistulae** a) single horseshoe fistulae.

b) Double horseshoe fistulae

5. **Congenital fistulae** a) single

b) multiple.

All these may be blind at either of the ends or complete.

PARK'S CLASSIFICATION:

. Type 1: Inter sphincteric fistula

Type 2 Trans sphincteric fistula

Type 3: Supra sphincteric fistula

Type 4: Extra sphincteric fistula

Goodsall's rule : states that if the external opening is behind the horizontal axis, the fistulous track bends to have a curved course terminating in an internal opening in posterior mid-line of the anal canal; whilst those anterior to the axis run directly to the anal canal.

ETIOLOGY AND PATHOGENESIS OF FISTULA-IN-ANO

Fistula-in-ano is always secondary to any of the causative factors mentioned below which include

a. Perianal abscesses and anal fissure (non-specific)
b. other rectal conditions after obstetrical or gynecological surgeries
c. Tuberculosis
d. Ulcerative colitis
e. Crohn' s disease (regional entero-colitis)
f. Carcinoma of the rectum and anal canal
g. Lympho-granuloma venereum
h. Actinomycosis of the ano-rectal region
i. Perineal injuries
j. Radiation induced fistula-in-ano

Perianalabscess:

The most common cause of fistula-in-ano is a result of inadequately treated or spontaneously ruptured ano-rectal abscess without

treatment. The abscess may burst externally or internally. The infection becomes chronic and if neglected results in a fistula. The reason for this is not well defined but the following factors are said to be causative:

i. The fatty tissue around the anus is said to have poor resistance to infection.

ii. If the abscess opens into the rectum or anus internally which is common sequelae of a neglected ano-rectal abscess there will be persistent infection of the abscess cavity from the gut organisms, which result in chronicity.

iii. The anal sphincters may impede the drainage of the abscess cavity.

iv. Presence of a foreign body like a fish bone or egg shell might result in non-healing and persistent infection.

The entry of organisms to the perianal tissue is not well established. The pelvi rectal abscess is due to diverticulitis or ulcer perforating all coats of the bowel wall. The superficial breach of mucus membrane as in fissure-in-ano will not commonly result in an abscess.

It was Chiari in 1878 and others in 1880 who first described the anal glands and suggested these act as the channel through which the infection is carried to perianal tissues.

Tuberculosis:

It is known for a long time that tuberculosis is sometimes the cause of fistula-in-ano The mode of infection is as follows.The organisms are swallowed in the sputum and enter the perianal tissue through minute abrasions. Blood borne infection is theoretically possible.The incidence of tubercular fistula-in-ano is decreasing due to better control of the disease.

CLINICAL MANIFESTATIONS

There will be previous history of having had perianal abscess

The discharge may be purulent or sero-purulent.

Fistula-in-ano is usually a **painless** condition. Onset of pain might indicate formation of a recurrent abscess, which persists till the abscess is evacuated, either spontaneously or by intervention.

Soiling of the perianal skin, which is left in a constant wet state, leads to perianal dermatitis, pruritus and maceration of the skin.

In fistulae due to procto-colitis, Crohn's disease, actinomycosis or carcinoma of the ano-rectal region there will be additional bowel symptoms. Cases of tubercular fistulae may be associated with symptoms of pulmonary tuberculosis, which requires careful enquiry.

INSPECTION: Inspection of the anal region reveals **one or many external openings.** Single opening is the most common. In long standing cases the external opening may be situated over the summit of a little pink or a **red nodule**, **which is due to exuberant granulation tissue.** Not frequently the sinus would have temporarily healed and its position is marked by a **raised papilla or a scar.** The surrounding perianal skin may show a scar, which is due to previous surgeries for fistulae or abscess. It may be red, moist and thickened (macerated) due to **secondary pruritus-ani.**

PALPATION: The next step is a careful digital palpation of the perineal region and anal canal in which **pus can be expressed** and will give an indication regarding the position of the track. Palpation of the **indurated track** is more suggestive of the location of the fistulous track.

Palpation of the anal canal reveals the **induration of an internal opening** . The pubo-rectalis can be felt as a thick horizontal rod on one or both sides posteriorly at or above the anal ring in presence of posterior horse-shoe fistulae. This is well appreciated if it is unilateral. It is possible to mistake the double horse-shoe fistulae for an abnormally prominent firm pubo-rectalis sling.

PROBING OF THE TRACK: After the fistulous track has been determined by careful palpation probing is more purposeful than without the preliminary inspection and palpation. It also minimizes the risk of creation of false passage by injudicious probing.

A **medium sized malleable silver probe** or some form of probe with pointed director capable of being bent in the last 3cm as required is used to probe the horse shoe fistulae (Allingham's probe pointer). If the internal opening is very small then a lacrimal duct probe can be used. For simple fistulae St.Mark's hospital pattern of probe (pointed director) is sufficient.

.**PROCTOSCOPY:** Proctoscopy may show the internal opening, which may not have been felt by digital examination or by probing, by the escape of a bead of pus on probing and direct visualization. **Proctoscopy**

will also reveal the state of the rectal mucosa and any evidence of procto-colitis.

SIGMOIDOSCOPY: It is advisable to inspect the terminal bowel and exclude any lesion particularly in patients above 45 years of age. A neoplasm may be detected in the rectum or the sigmoid colon, which can be the cause of the fistula. It can also detect presence of inflammatory bowel disease. If needed ,we have to do colonoscopy.

ABDOMINAL AND GENERAL CLINICAL EXAMINATION: It is routinely done prior to the local examination. It will help in localizing the manifestations of specific cause of fistulae like tuberculosis, malignancy and others.

RADIOGRAPHIC FINDINGS: Injecting a radio-opaque substance into the track will help in demonstrating the extension, the number and the course of the fistulous track. X-ray of the chest reveals, sometimes the typical or healed tuberculous lesions in cases of tubercular fistula-in-ano. Sputum examination for tubercle bacilli and ESR will also help. In cases of proctocolitis barium series and barium enema will help in determination of the cause of fistula-in-ano.

Anal and rectal ultrasound as well as echo-endoscopy are also useful

MRI provides more useful information on the **anatomy of the fistulous** track while **ultrasonography** gives useful **information about the sphincters.**

ANAL MANOMETRY: Pressure evaluation of the sphjncter mechanism is helpful in 1. Decreased tone observed during preoperative evaluation. 2. History of previous fistulotomy . 3. History of obstetrical trauma 4. high trans sphincteric , supra sphincteric fistula. 5. very old patients . If anal pressure is decreased ,surgical injury to sphincters should be avoided.

HISTOPATHOLOGICAL EXAMINATION: Histological examination of the fistulous track after surgery has to be routinely done. By this we can appreciate the pathogenesis of fistula-in-ano, which can include nonspecific inflammation with or without foreign body giant cell reaction, features suggestive of tuberculosis, malignancy and inflammatory bowel disease.

Pre operative biopsy of multiple fistulae has to be routinely done.

SEQUELAE AND COMPLICATIONS: If the fistulae are not treated, the chances are **very minimal that spontaneous healing occurs**. In rest of the cases the fistulae are chronic. Persistence of fistulae beyond 20 years has been reported. In addition to the discomfort caused due to continous discharge in a case of untreated fistula, there is also a possibility of **malignancy arising from the fistulous track. The malignancy can be adeno-carcinoma, colloid carcinoma or squamous carcinoma.**

DIAGNOSIS: Careful examination as described above will reveal the presence of the fistulous track and its relation to the sphincter musculature, which is very essential in planning surgical treatment.

DIFFERENTIAL DIAGNOSIS:

(i) Urethral fistula.

(ii) Pilonidal sinus

(iii) Suppurative Hidradenitis

(iv) Concealed Fistula

(v) Pruritus ani

It must be remembered that the colloid carcinoma does not arise from the rectal mucosa but from the epithelium of congenital inter-muscular

fistulous track. Hence there might not be any evidence of growth in the lumen, If mucoid discharge is abundant, the patient should be examined under anesthesia to rule out malignancy. A biopsy and histopathological examination is diagnostic.

TREATMENT OF NON-SPECIFIC FISTULA

There are various methods of treatment of fistula-in-ano.

Reassure the patient regarding the etiology of the disease since the common belief is that the disease is contracted due to some venereal infection.

CONSERVATIVE MANAGEMENT:

Antibiotics and analgesics

OPERATIVE MANAGEMENT:

(i) **FISTULOTOMY:** Laying open the fistula and allowing the wound to heal by granulation.

(ii) **FISTULECTOMY** followed by primary skin grafting (primary grafting). In this procedure , fibrosed tract is excised with the help of diathermy. After thorough excision tract with granulation tissue and perfect

haemostasis, primary skin grafting of the resultant raw area done to fasten the healing.

(iii) **FISTULECTOMY with primary closure:** In this procedure, fistulectomy , followed by obliteration of raw area by primary closure from depth by one or more layers of sutures.

The important thing one should bear in mind is the preservation of the sphincters. It is inevitable that certain amount of sphincter musculature has to be sacrificed during the surgery. The relation of the fistulous track to the ano-rectal ring both pre operatively as well as on the table should be determined under anesthesia. In subcutaneous, low anal and sub-mucus fistulae there is no danger of incontinence. In the case of complete ano-rectal or pelvi-rectal fistulae with an internal opening above the level of the ano-rectal ring the classical method of laying open the track is not possible.

An alternative procedure **(seton insertion)** in difficult high fistulae of this type would be to use the strong braided silk / silastic tube / blood vessel marker tube which is passed through the internal opening and around the lower portion of the sphincters. It is tightened at regular intervals. The purpose of which being to stimulate a fibrous reaction which is supposed to

fix the sphincters at the point where the ligature cuts through at the end of 5-6 weeks or it is removed by removing the sphincters when the cut ends are believed to be anchored by fibrous tissue and do not retract.

USEFUL in
1. COMPLEX FISTULAS
2. RECURRENT FISTULAS
3. ANTERIOR FISTULA IN FEMALE PATIENT
4. POOR PRE OPERATIVE SPHINCTER PRESSURE

Oral antibiotics should be given pre and post operatively to sterilize the gut and the sutures are removed on the 7 post-operative day.

COMPLICATIONS OF SURGERY:

EARLY: **1.Urinary retention** **2. Bleeding**
3. Fecal impaction **4. Thrombosed haemorrhoids**

DELAYED: **1. Recurrence** **2. Incontinence**
3.Anal stenosis **4.Delayed wound healing**

OTHER TREATMENT OPTIONS :

FIBRIN GLUE :

In some cases, an anal fistula is closed by the injection of fibrin glue – a solution of the clotting factors **fibrinogen and thrombin.** This glue results in the formation of a clot within the fistula, which helps promote healing of the track.

ENDORECTAL ADVANCEMENT FLAP :

This is a surgical procedure typically reserved for more complex fistulas. This surgery is often more involved and invasive than the other procedures. In this procedure, internal opening of the fistula is first identified. Then a flap of the rectal wall adjacent to the internal opening is dissected out. It is pulled down over the internal opening and sutured into place to close the opening, allowing the fistula to heal.

ANO CUTANEOUS ADVANCEMENT FLAP

SURGISIS AFP [Anal Fistula Plug] :

The Surgisis AFP is a unique alternative to traditional fistula surgery . It is a conical device derived from porcine source , submucosa of the porcine small intestine. The plug is placed by drawing it through the fistula tract and suturing it in place. This biomedical device supports tissue healing.

Treatment of Tuberculous fistulae: Tuberculous fistulae are considered to treat because of the high failure of the operative management of high anal fistulae. Frequently bacterial confirmation of the etiology is lacking. It is strongly suspected that the majority of the failures have been not due to tuberculosis but due to remnant of the part of unopened track.

Patients will have to be treated with the standard regimen of anti-tubercular treatment. The healing might take a long time compared to fistulae due to nonspecific inflammation.

Treatment associated with Inflammatory Bowel Disease: Any attempt at fistulectomy ignoring the etiology of inflammatory bowel disease will lead to exacerbation of the colitis. As the colitis subsides the fistulae become quiescent, but complete cure is rarely achieved. Radical surgical treatment in intractable cases includes total procto colectomy and ileal pouch.

Treatment of fistulae associated with carcinoma: Treatment is the same as for a carcinoma.

AIDS and peri anal suppurative lesions: In a patient with HIV infection, untreated infections will rapidly progress to necrotising infection or disseminated abscesses. Hence there is no role for non-operative management.

In a patient with manifest AIDS who presents with fistula-in-ano the patient should be managed conservatively.

MATERIALS AND METHODS

The materials for study of clinico-pathological aspect of fistula-in-ano were randomly selected from the cases admitted in Govt. Royapettah Hospital, Chennai-during the period of May 2006 Aug 2008 patients admitted were subjected to clinical examination, laboratory examination and radiological investigations. Diagnosis was confirmed and appropriate treatment was instituted.

Fifty five cases selected were studied as follows:

Almost all of the cases were found to be non-specific fistulae-in-ano except 2 of them who had tuberculous pathology. No cases of fistulae as a result of inflammatory bowel disease, malignancy or actinomycosis were studied as no such patients presented to the hospital during the study period.

The method of study adopted was with the aim to study the etiology, clinical picture and management.

Each patient immediately after admission was investigated as follows:

Clinical history and physical examination, both general and systemic was recorded according to the proforma prepared. Detailed examination of the local region with regards to the external opening or openings in relation to the axis was done. The extent of induration in relation to the axis, course and its relation to the anorectum was noted. Also the behavior to the Goodsall's rule was noted. Per-rectal and proctoscopic examination was done in order to assess the track and internal opening in relation to the ano-rectum and to rule out pathology in the rectum, sigmoidoscopy was routinely done in order to rule out other pathology, which might have resulted in fistula-in-ano. Detailed abdominal examination was done to rule out other conditions which could have caused fistula-in-ano. Each patient was subjected to biochemical and hematological investigations. All the patients were subjected to radiological investigations.

Radiological examination consisted of

a) Chest x-ray

b) Fistulogram.

Laboratory examination included routine blood count and urine examination. The mode of treatment was decided based on individual cases. Operative treatment was offered to all.

All patients were given pre-procedure antibiotics. Bowel preparation was done by advising clear liquid diet from 2 days prior to procedure and low enema on the night before and on the day of procedure.

At the time of surgery the course of fistulous track was noted with reference to Goodsalls rule and the ano-rectal ring in order to study the morbid anatomy. If the fistula was small and low then fistulectomy primary closure of the track was attempted, major was allowed to heal by secondary intention.

The excised track and granulation tissue was sent for histopathological examination.

Post-procedure management was instituted in all cases.

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RESULTS

TABLE 1

SEX INCIDENCE

Sex	Number	Percentage
Male	46	83.6%
Female	9	16.4%

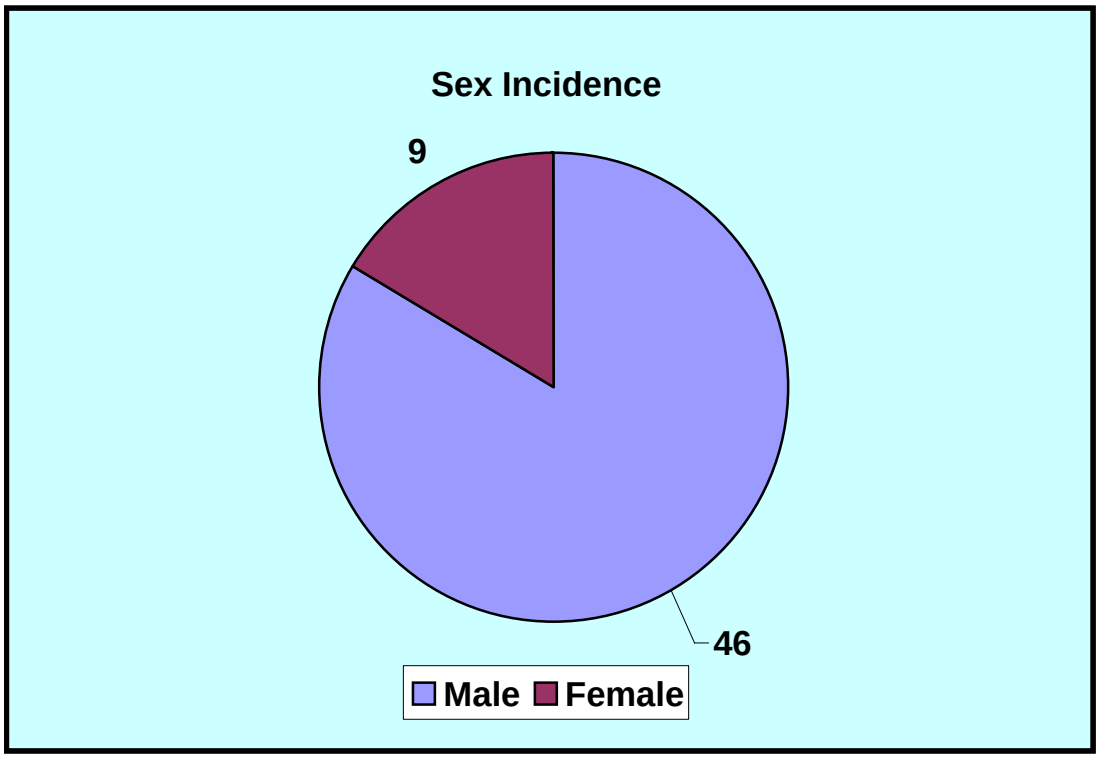


TABLE 2
AGE INCIDENCE

Age range	Number	Percentage
0-10	0	0
11-20	2	3.6
21-30	13	23.6
31-40	15	27.3
41-50	14	25.5
51-60	10	18.2
61-70	1	1.8
71-80	0	0
>80	0	0

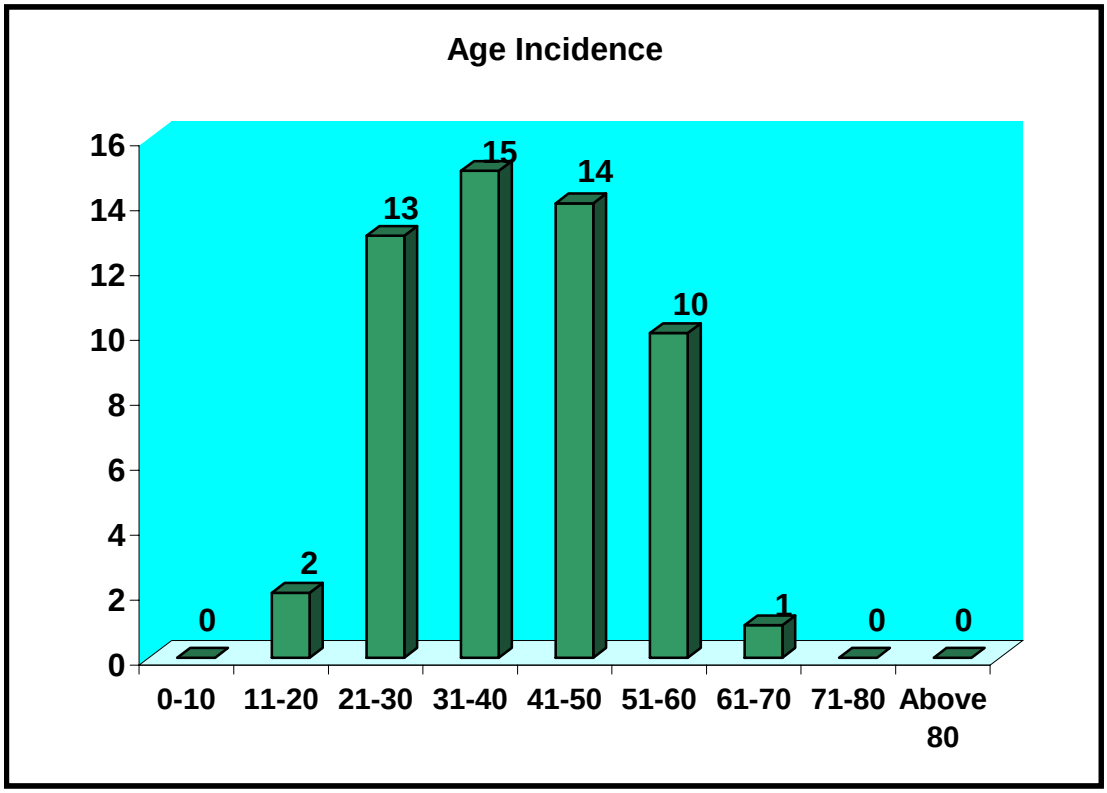


TABLE 3

CO-RELATION OF PERIANALABSCESS WITH FISTULA-IN-ANO

History of abscess present	83.6%
No history of perianalabscess	16.4%

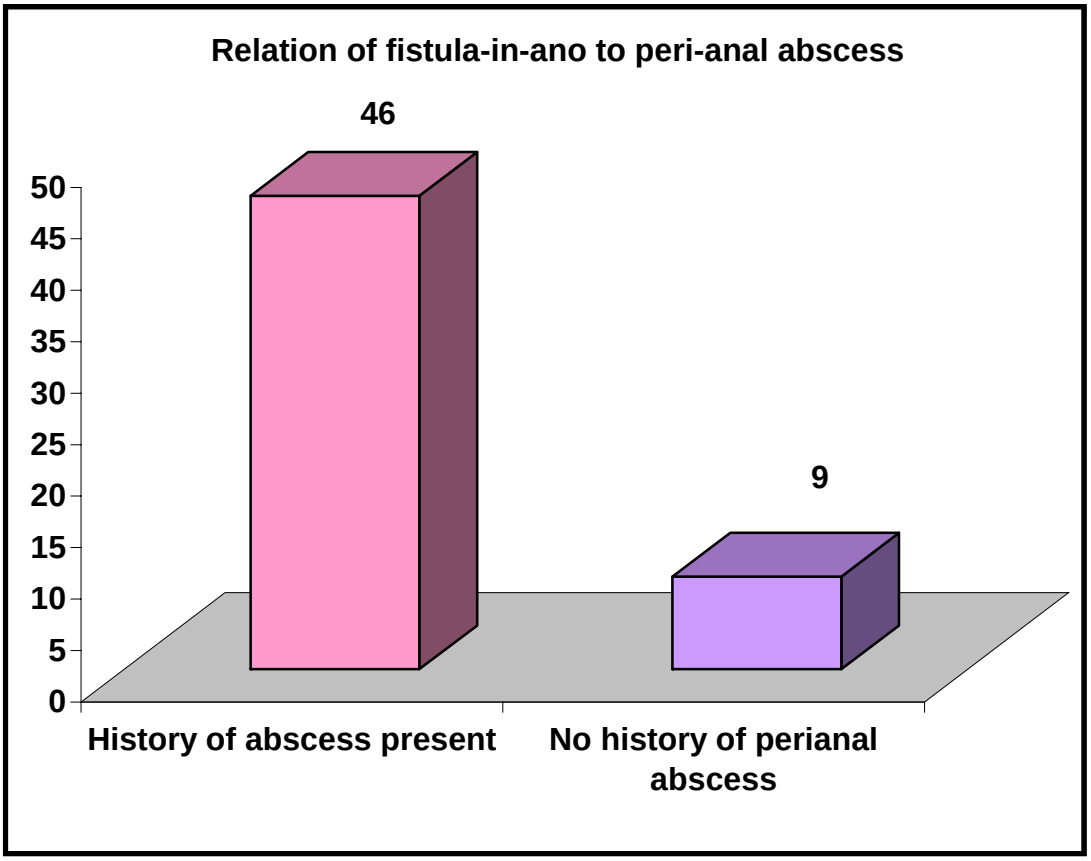


TABLE 4

RELATION OF EXTERNAL OPENING TO THE TRANSVERSE ANAL LINE

	Number	Percentage
Anterior	24	43.6%
Posterior	31	56.4%

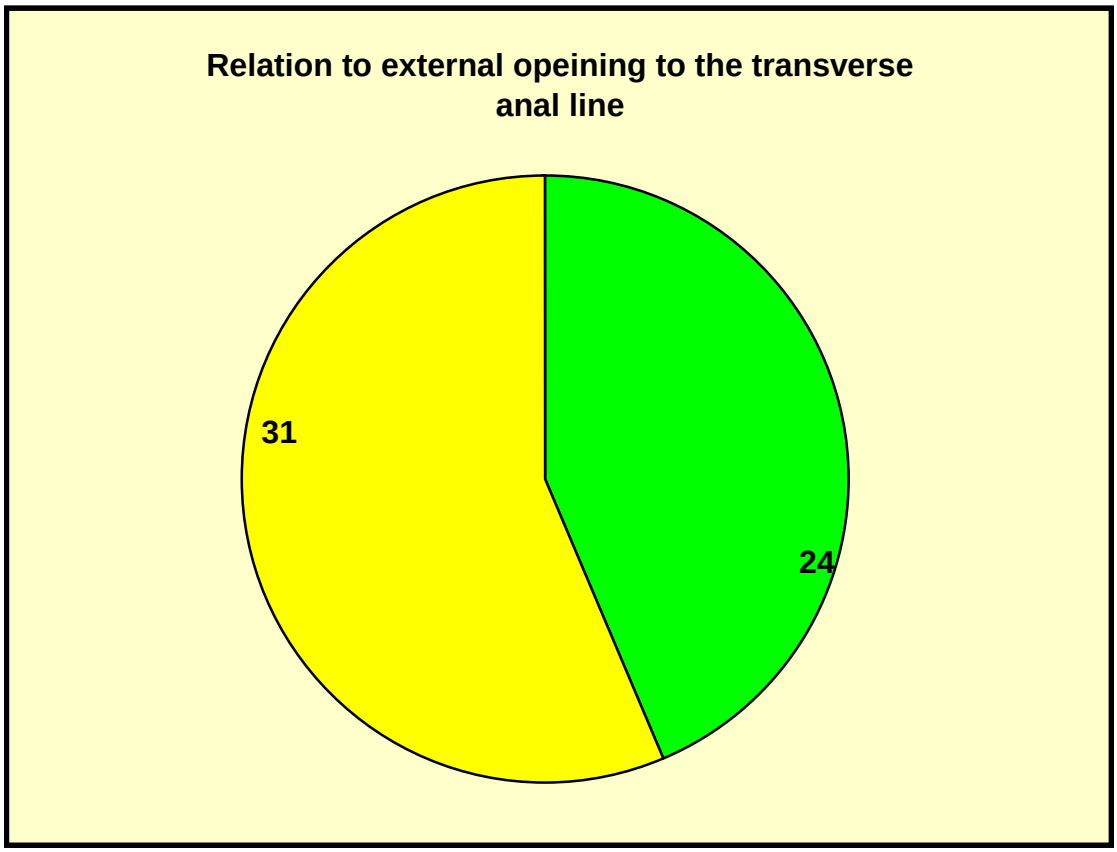


TABLE 5

INTERNAL OPENING ON PROCTOSCOPY

	Number	Percentage
Visible	33	60%
Not visible	22	40%

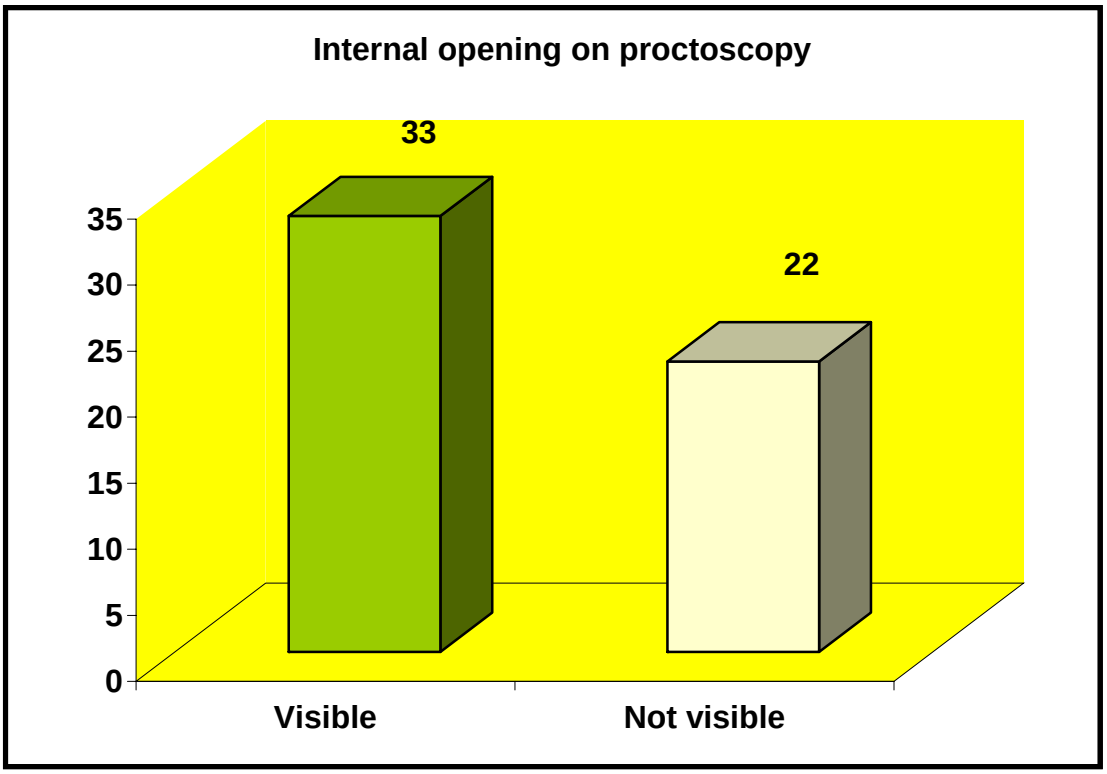


TABLE 6

RELATION OF INTERNAL OPENING TO THE ANO-RECTUM

	Number	Percentage
Low	47	85.5%
High	8	14.5%

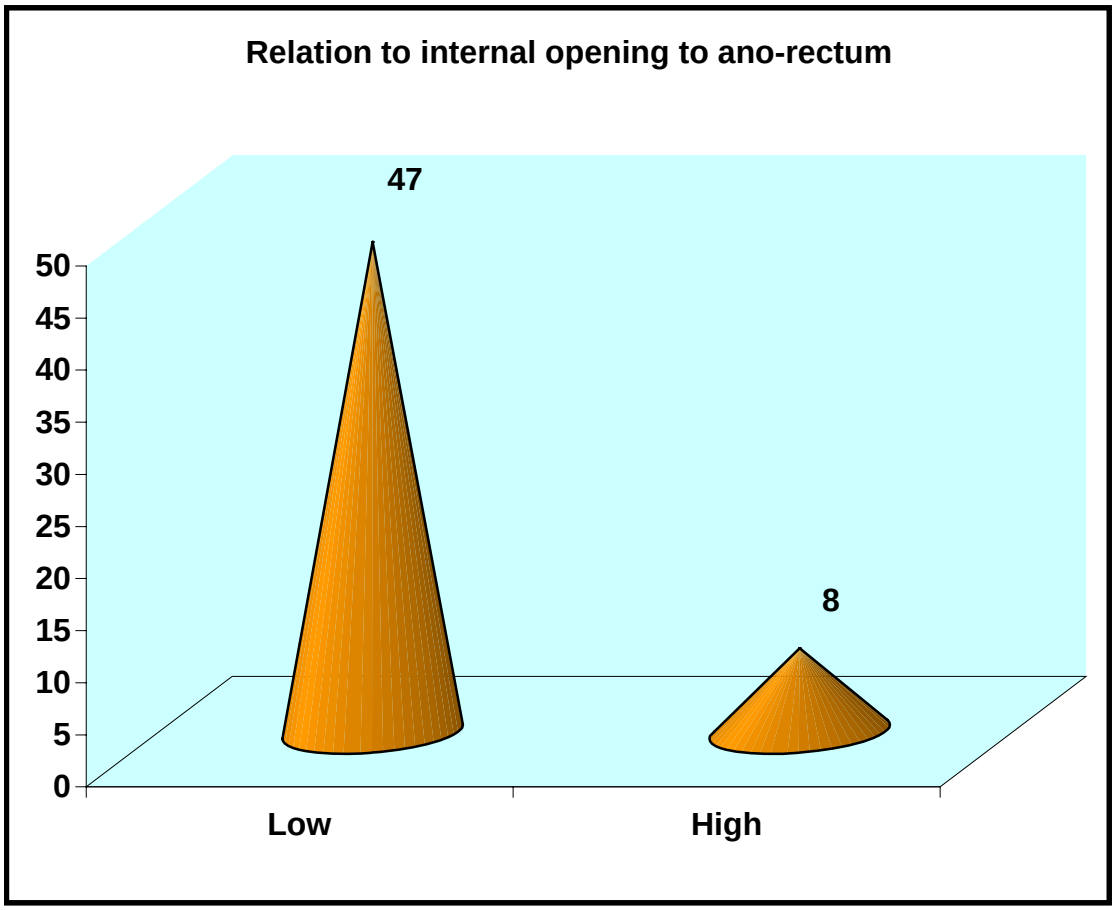


TABLE 7

RELATION OF THE TRACK TO THE ANO-RECTUM

	Number	Percentage
Low	47	85.5%
High	8	14.5%

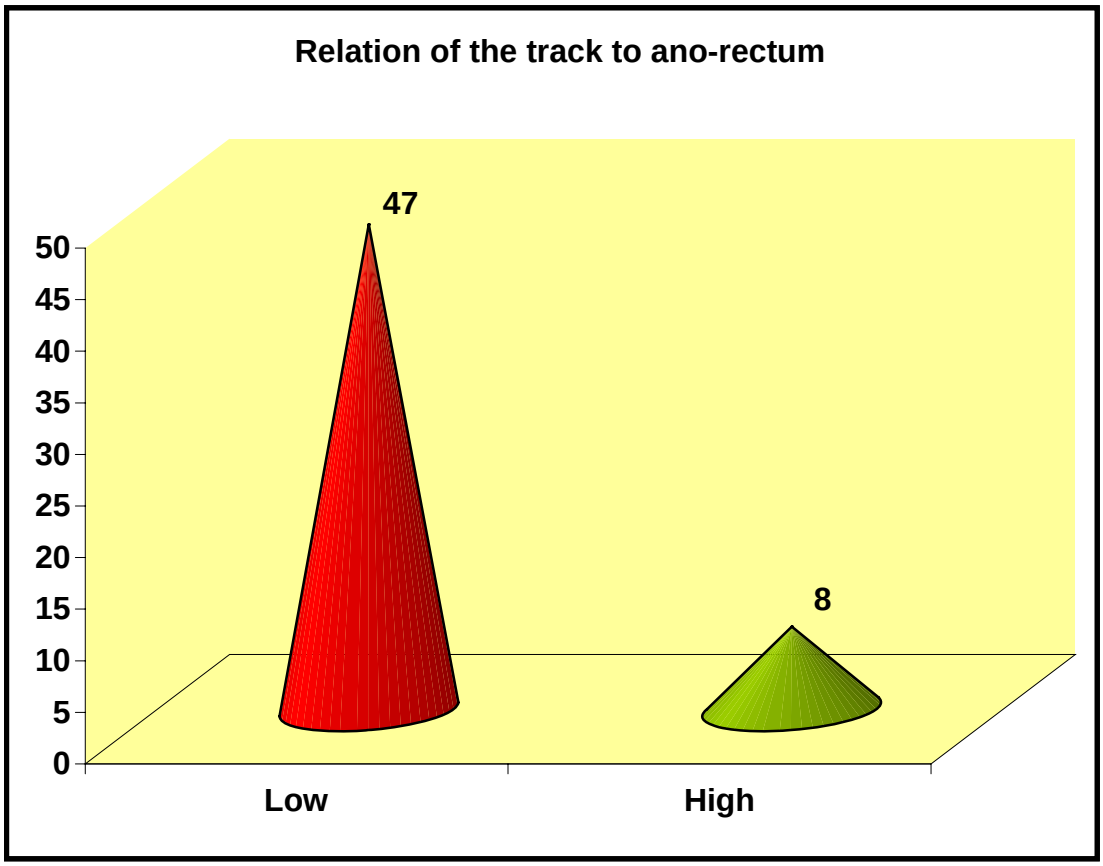


TABLE 8
SIGNS OF SYMPTOMS

Symptom/Sign	Number	Percentage
Pain	43	78.2%
Pruritus	55	100%
Discharge	55	100%
Ext. Opening	55	100%
Granulation	34	61.8%
Int. Opening	33	60%

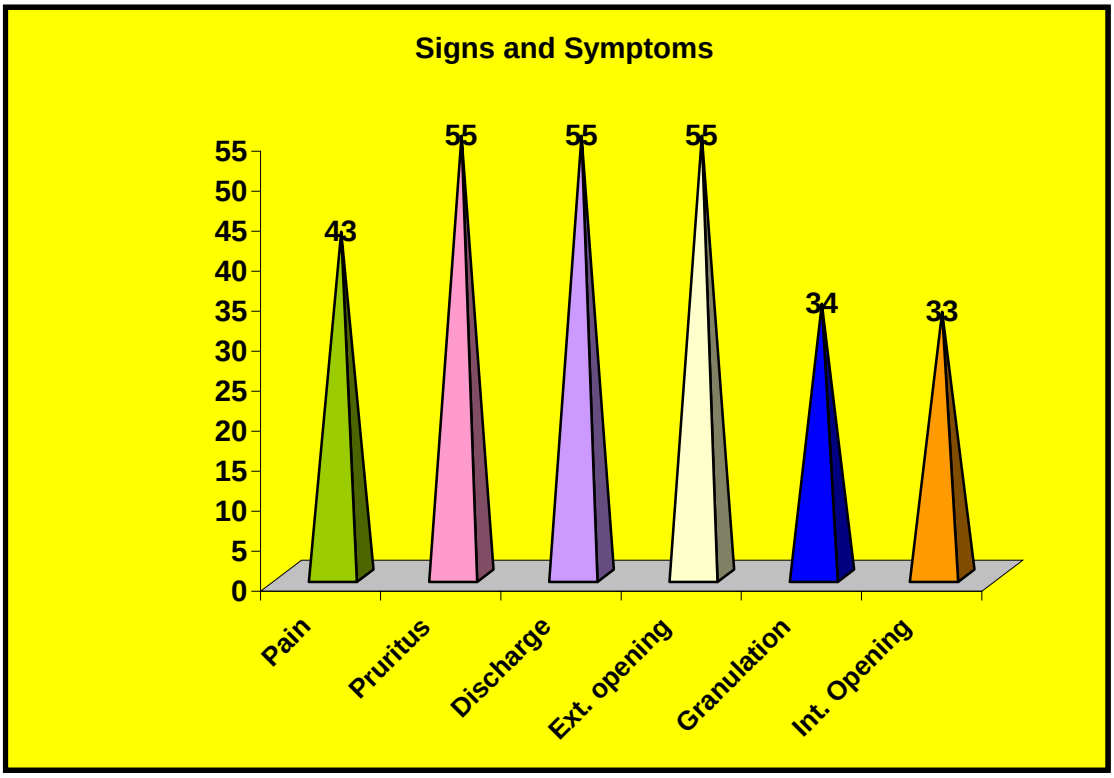


TABLE 9

TYPES OF FISTULAE

	Number	Percentage
Ant. Low anal	14	25.5%
Post Low anal	20	36.4%
Low horse shoe	1	1.8%
Blind ext fistula	4	7.3%
Peri anal with sub mucus extension	8	14.5%
High horse shoe	6	10.9%
Complex fistula with high int. opening	2	3.6%

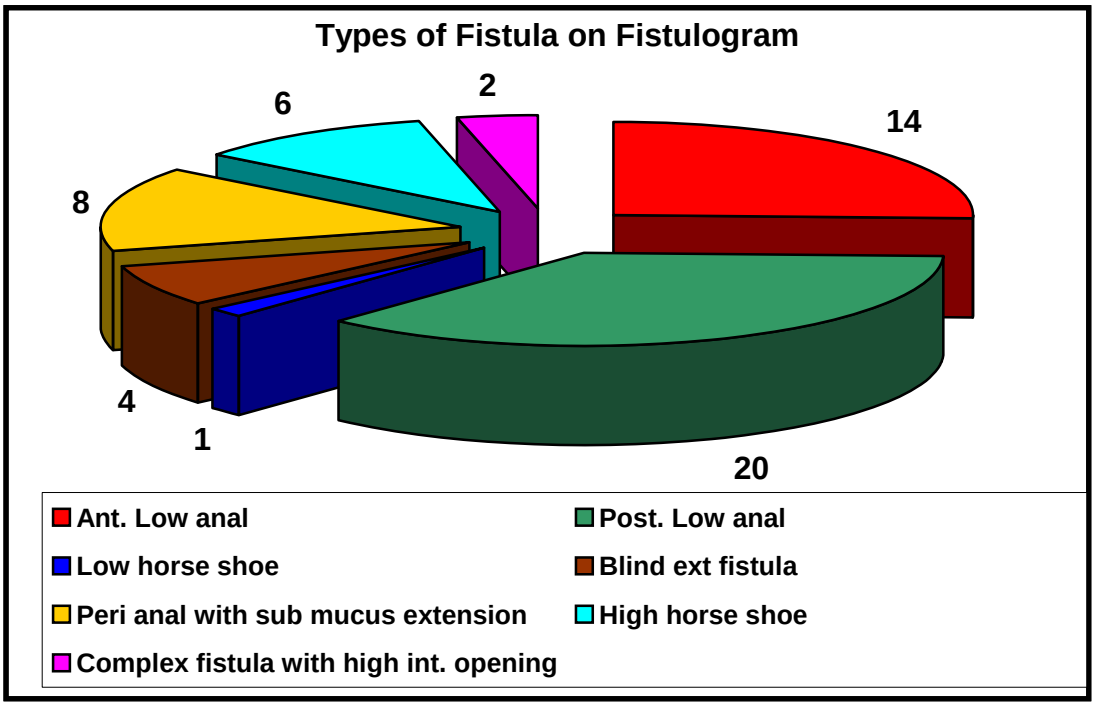


TABLE 10
MODE OF THERAPY

Mode of therapy	Number	Percentage
Surgery	52	94.6%
Seton	1	1.8%
ATT	2	3.6%

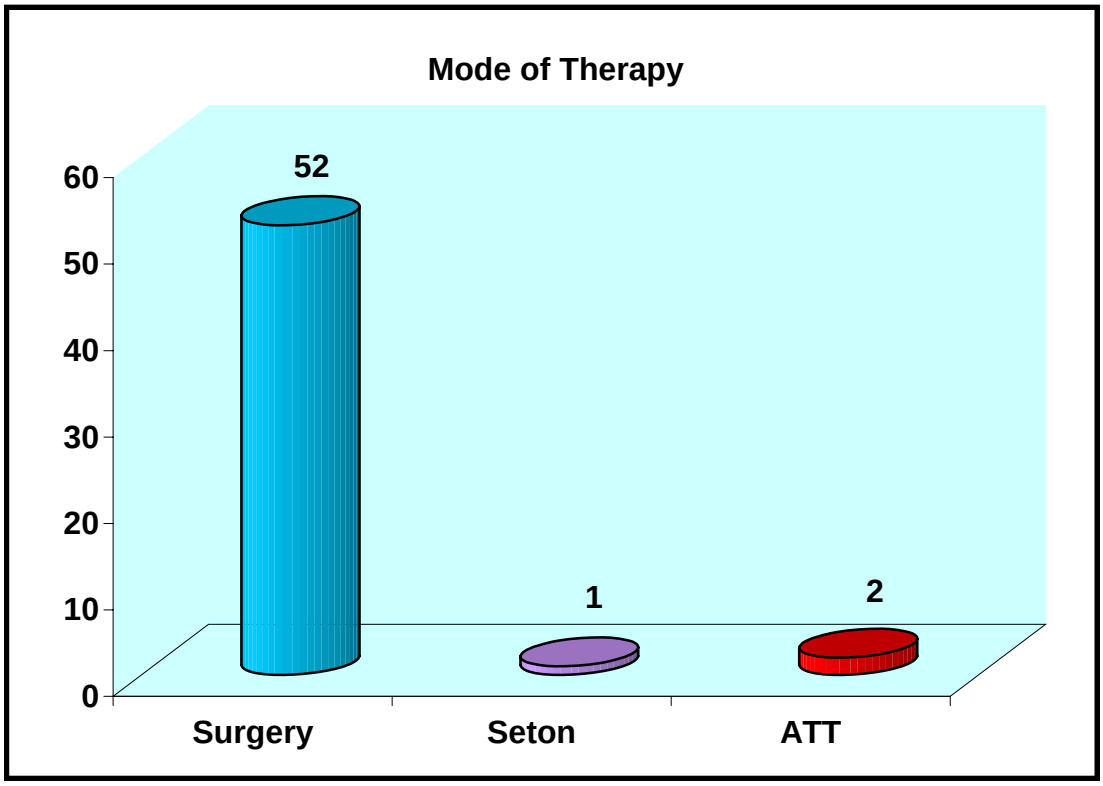


TABLE 11

TYPE OF SURGERY

	Number	Percentage
Fistulotomy	10	19.3%
Fistulectomy with primary closure	4	7.7%
Fistulectomy without primary closure	38	73%

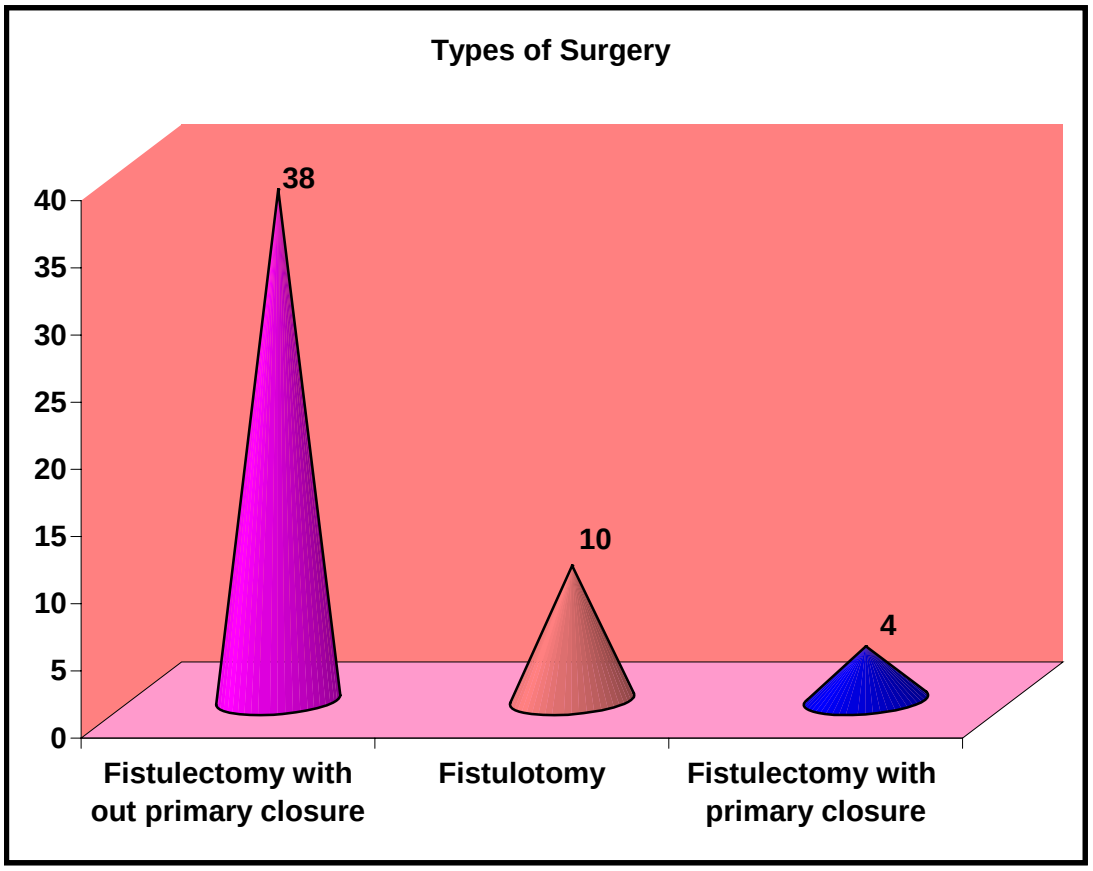


TABLE 12

HISTOPATHOLOGICAL EXAMINATION

Histopathology	Number	Percentage
Non-specific inflammation	53	96.4%
Other pathology tuberculosis	2	3.6%

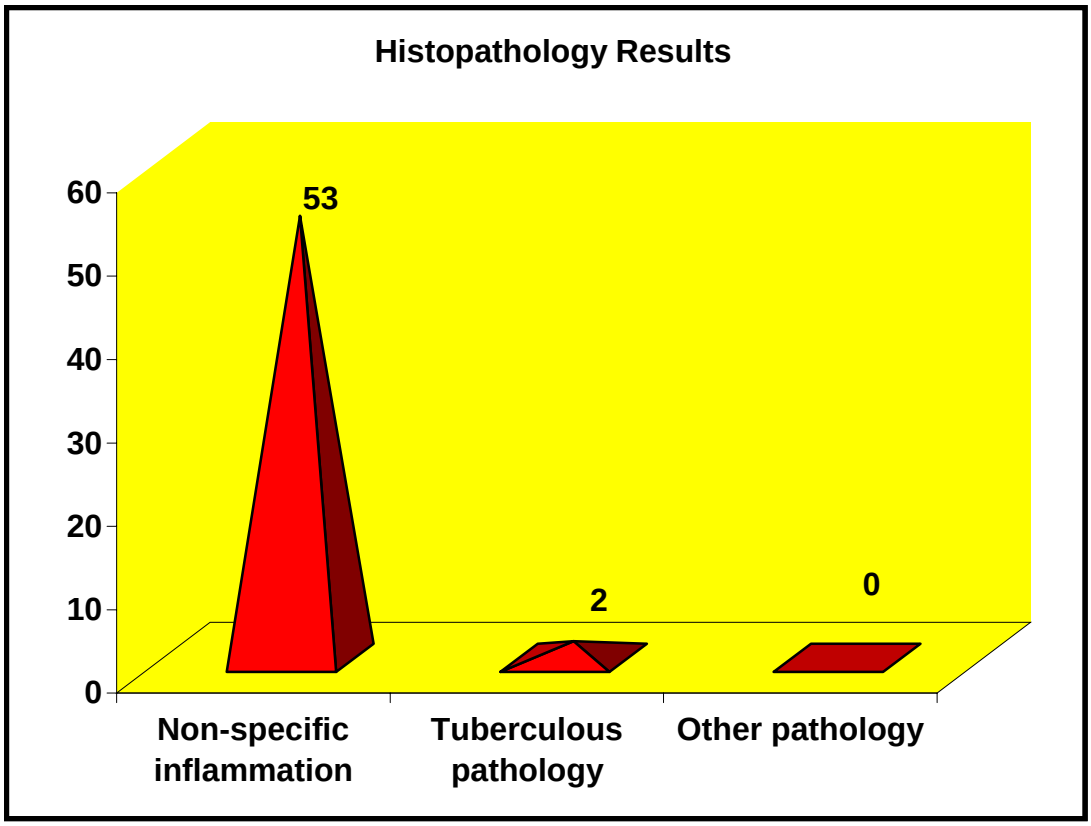


TABLE 13

COMPLICATIONS OF SURGERY

	Major Incontinence	**Minor Incontinence**
SURGERY[52 Patients]	Nil	5 patients
SETON Insertion	-	-

TABLE 14

FOLLOW-UP AT THE END OF 6 MONTHS OF SURGERy

	Number	Percentage
Asymptomatic	47	94%
Recurrence	3	6%

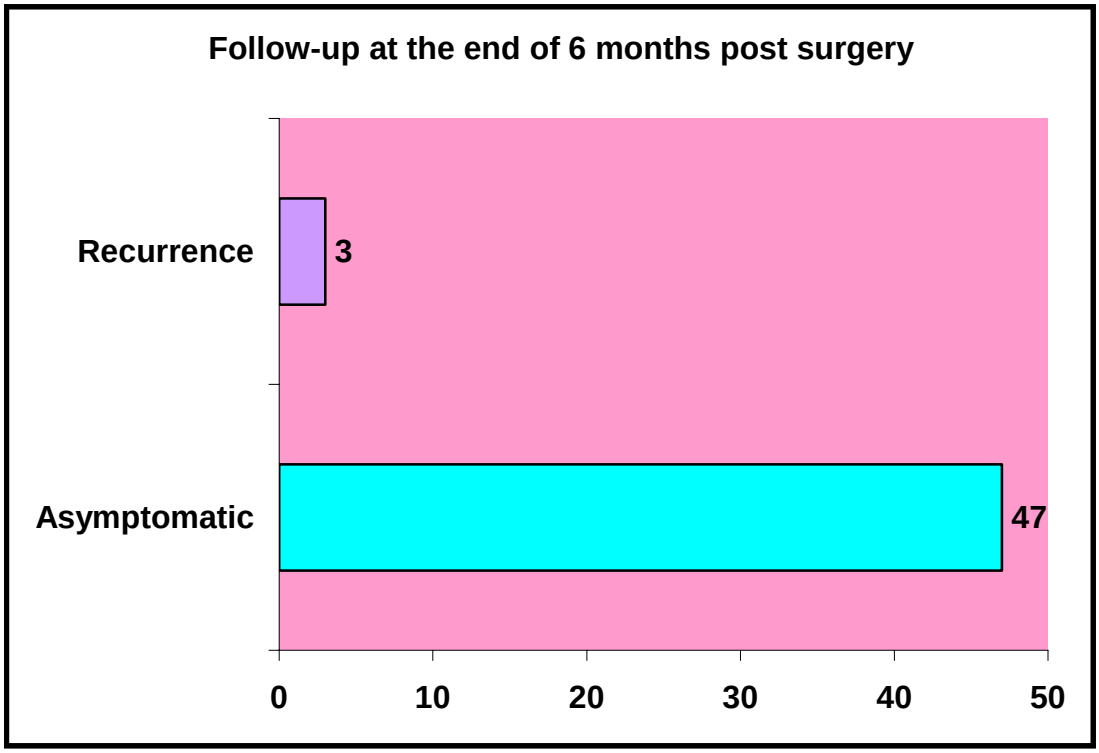
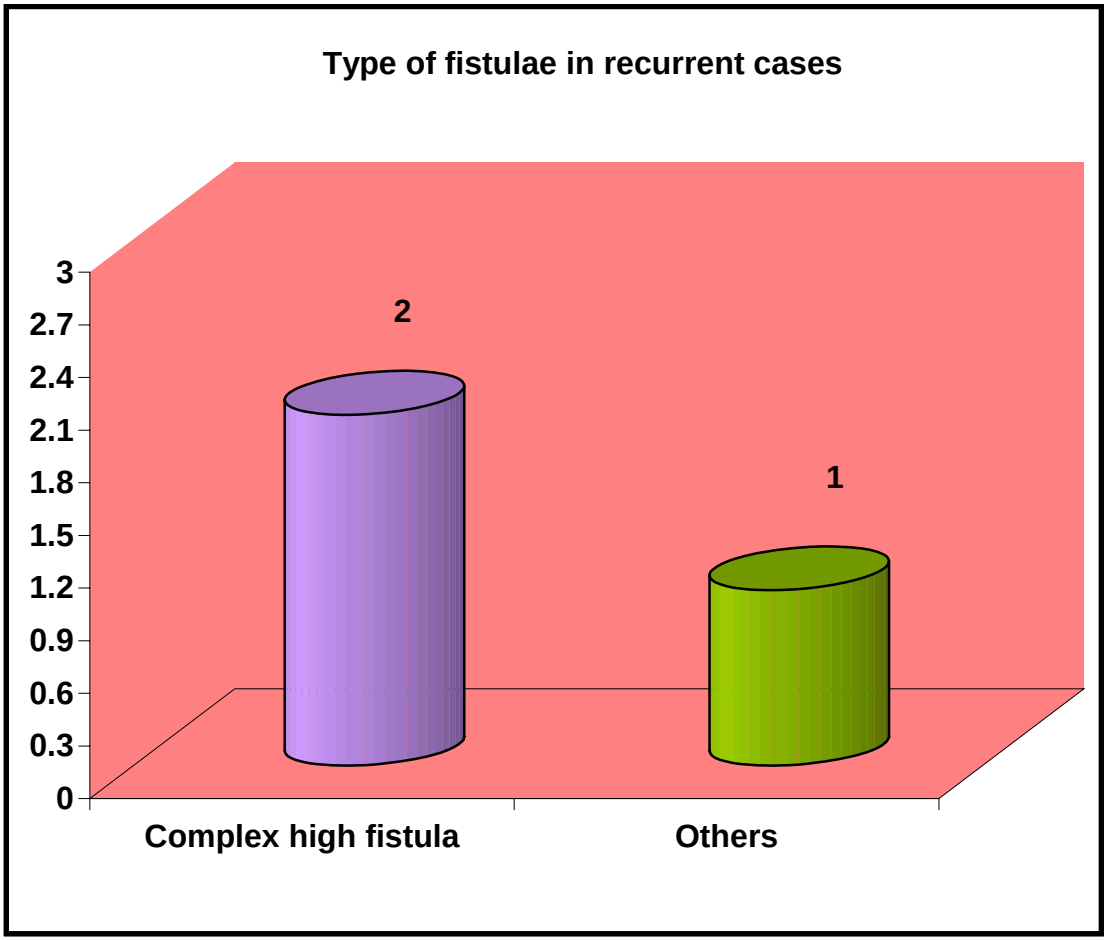


TABLE 15

TYPE OF FISTULA IN RECURRENT CASES

Complex high fistula	2
Others	1



ANALYSIS AND DISCUSSION

The incidence of fistula in ano and the etiological factors are studied from the patients admitted in Govt. Royapettah Hospital, Chennai and the data regarding the signs symptoms, laboratory and radiological investigations are analysed from the fifty five cases studied here.

Fifty five cases of fistula-in-ano were admitted to our hospital between May 2006 & August 2008.

The surgical procedure/adopted for the other patients was fistulectomy & fistulotomy for high fistulae. Fistulectomy was done for patients with a low & majority of single track fistula.

The cause of the fistula-in-ano could be conclusively decided by histopathological examination postoperatively / by biopsy. In this series, majority of cases were due to non specific inflammation. 2 cases were due to tuberculous pathology & started on Anti tuberculosis treatment (ATT)

In our study 83.6% of the patients were males and only 16.4% were females. The male to female ratio was approximately 5:1 when compared to 2:1 in India. Approximately 76.4% of the cases occurred between the age groups of 21-50 yrs. >75% patients in the age group of 21-40 yrs in India.

Approximately 83.6% of the patients gave a history of perianal abscess which either spontaneously ruptured or for which no medical attention was sought. 43.6% of the fistulae were anterior fistulae 56.4% were found to be posterior fistulae-in-ano . Anterior fistulas are common in nationwide study. 85.5% the fistulae were found to be low fistulae. 14.5% of the fistulae were found to be high fistulae which is comparable with nationwide study. All the patients gave history of pruritus, discharge and at least one external opening was found in all. 78.2% of the patients presented with pain, which could be attributed to active infection. Internal opening was visualized only in about 60% of the patients. Radiological investigations: Chest x-ray was done in all patients and was found to be normal. Fistulogram was done in needed patients. The most common types of fistulae found were posterior low anal and anterior low anal. Four patients had blind ending external track or sinuses. Two patients had complex fistulae with high internal opening. All patients were given the option of surgery. Pre operatively diagnosed tuberculous origin of fistula patients were started on ATT.

Of the 50 patients who underwent surgery, 8 of the patients underwent fistulotomy 38 patients underwent fistulectomy without primary closure & the other 4 patients underwent

fistulectomy with primary closure . Histopathological examination of the specimen of the track of all patients was reported as non-specific inflammation. In India also, commonest pathology is non specific. In western countries, there is little more cases of inflammatory diseases and less or almost nil of tuberculosis. There was no occurrence of Major Incontinence in those surgically treated patients. There was 5 patients (9.6%) developing flatus incontinence. There is around 0-17% report of major and minor incontinence each. Patients were followed till upto 6 months post-procedure. Out of the 52 patients who underwent surgery three patients were noted to have recurrence 5.7% vs 7.7%. Two of the three patients were noted to have complex fistula-in-ano with high internal opening pre-operatively. All the three patients who had a recurrence had fistulotomy as the procedure in the first instance.

SUMMARY AND CONCLUSIONS

1. Low anal (anterior and posterior) is the commonest type of fistulae seen in the series

2. The commonest predisposing factor appears to be a pyogenic perianal abscess which has not been treated or not been adequately treated

3. There is a greater incidence in males upto a ratio of 5:1

4. The commonest age group affected is between 20-50 years

5. Discharge, pruritus and pain are the most common presenting complaints

6. Clinical digital examination and probing is of utmost importance in diagnosing the type of fistula in relation to the anal canal.

7. All the cases have been operated under spinal anaesthesia.

8. Of the patients treated by surgical means, patients whose wound was primarily closed had a shorter healing time.

9. Primary closure of wound was attempted only in patients with low fistula in ano and sort single track.

10. Regular dressings of the wound was done. The wound healed in majority of the cases between 3-4 weeks. Primary suturing of the wound significantly shortened healing time.

11. There was no incidence of recurrence of fistula in cases of fistulectomy and primary closure done in patients with low fistula and single track.

12. Transient incontinence noted in upto 10% of the patients managed surgically which could be attributed to post-operative edema and transient low tone of the sphincters.

13. Though fistula-in-ano per se does not appear to carry any mortality, the morbidity can be minimized by proper diagnosis regarding the type of fistula and by good knowledge of ano-rectal anatomy.

14. Many a case of fistula-in-ano could have been prevented by the proper treatment of perineal and para-rectal suppurative lesions.

To achieve the goals of treatment , it is necessary to completely lay open the tract with minimal / preferably no loss of sphincter muscle , proper pre operative evaluation , light general / spinal anaesthesia , gentle probing , local infiltration of dilute adrenaline to achieve almost bloodless field and clearly exposing the sphincter muscle in all cases is a key to success. In high anal fistulas where we can not do fistulectomy, it is worth while to place a SETON & stage the procedure.

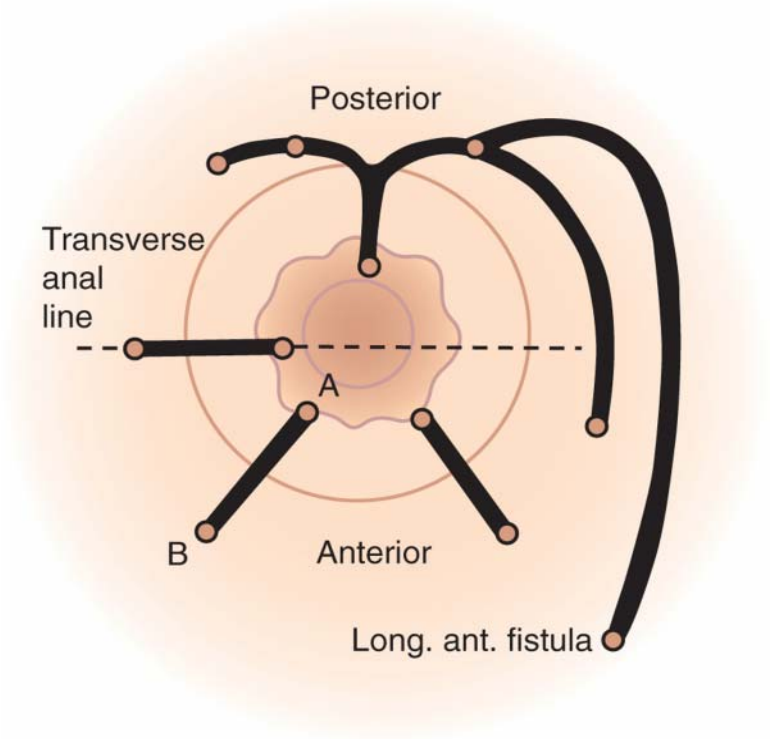


FIG : 4 GOODSALL'S RULE

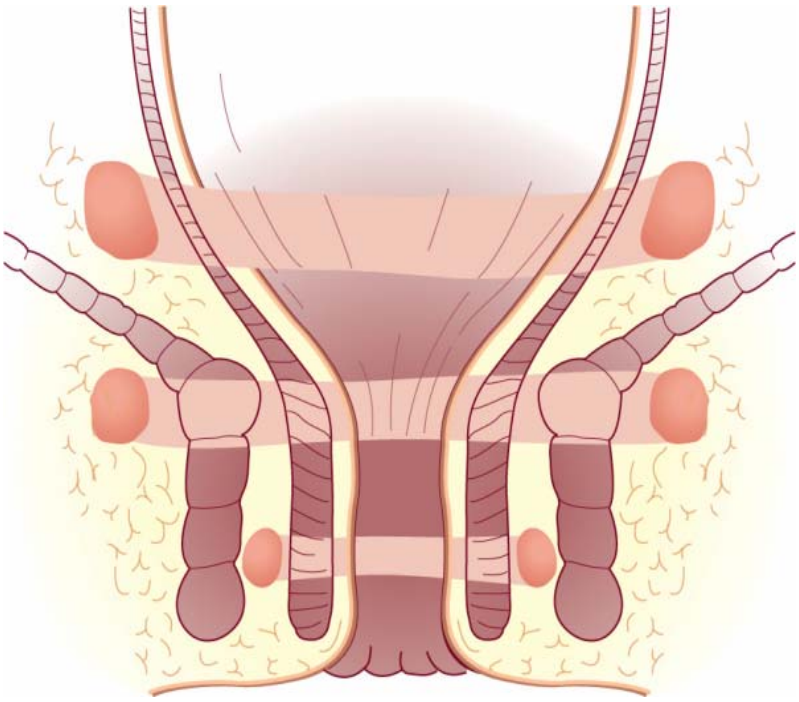


FIG : 5 THREE PLANES OF HORSE SHOEING

FIG: 1 DIAGRAMATIC REPRESENTATION OF THE ANAL CANAL

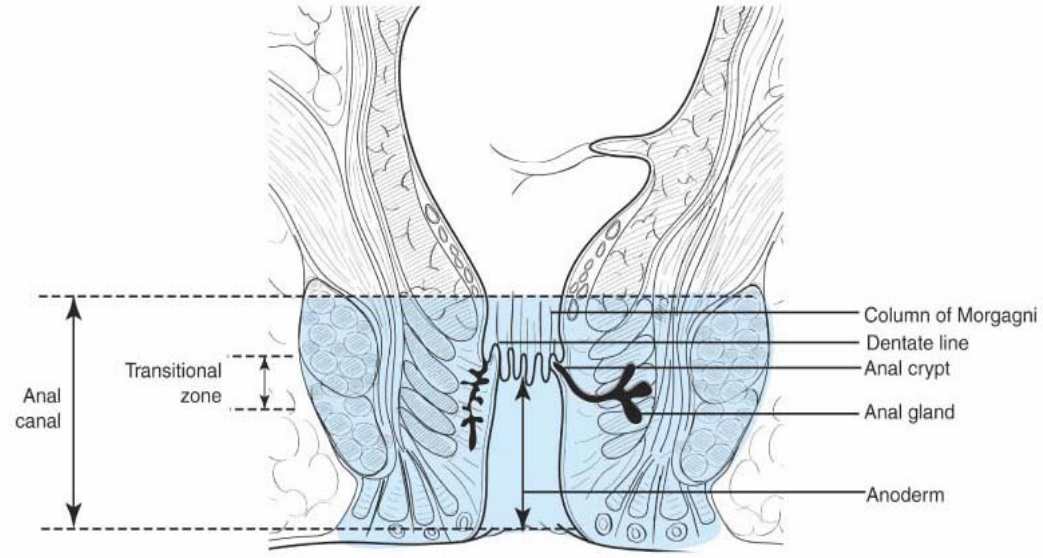
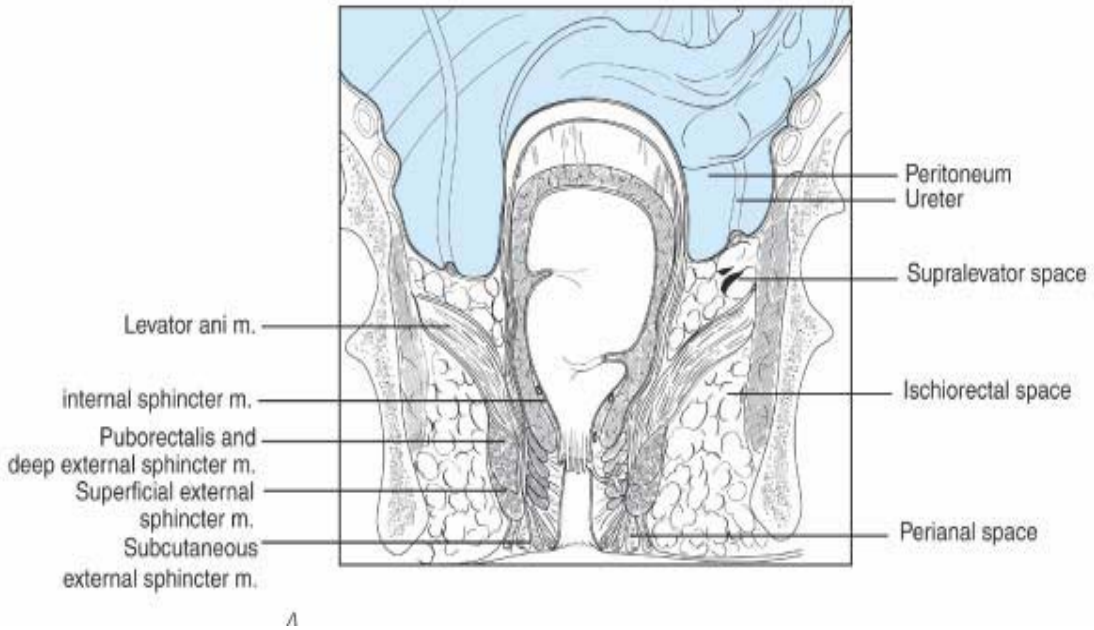


FIG: 2 DIAGRAMATIC REPRESENTATION OF ANAL MUSCULATURE


Peritoneum
Ureter
Supralevator space
Levator ani m.
internal sphincter m.
Ischiorectal space
Puborectalis and
deep external sphincter m.
Superficial external
sphincter m.
Perianal space
Subcutaneous
external sphincter m.

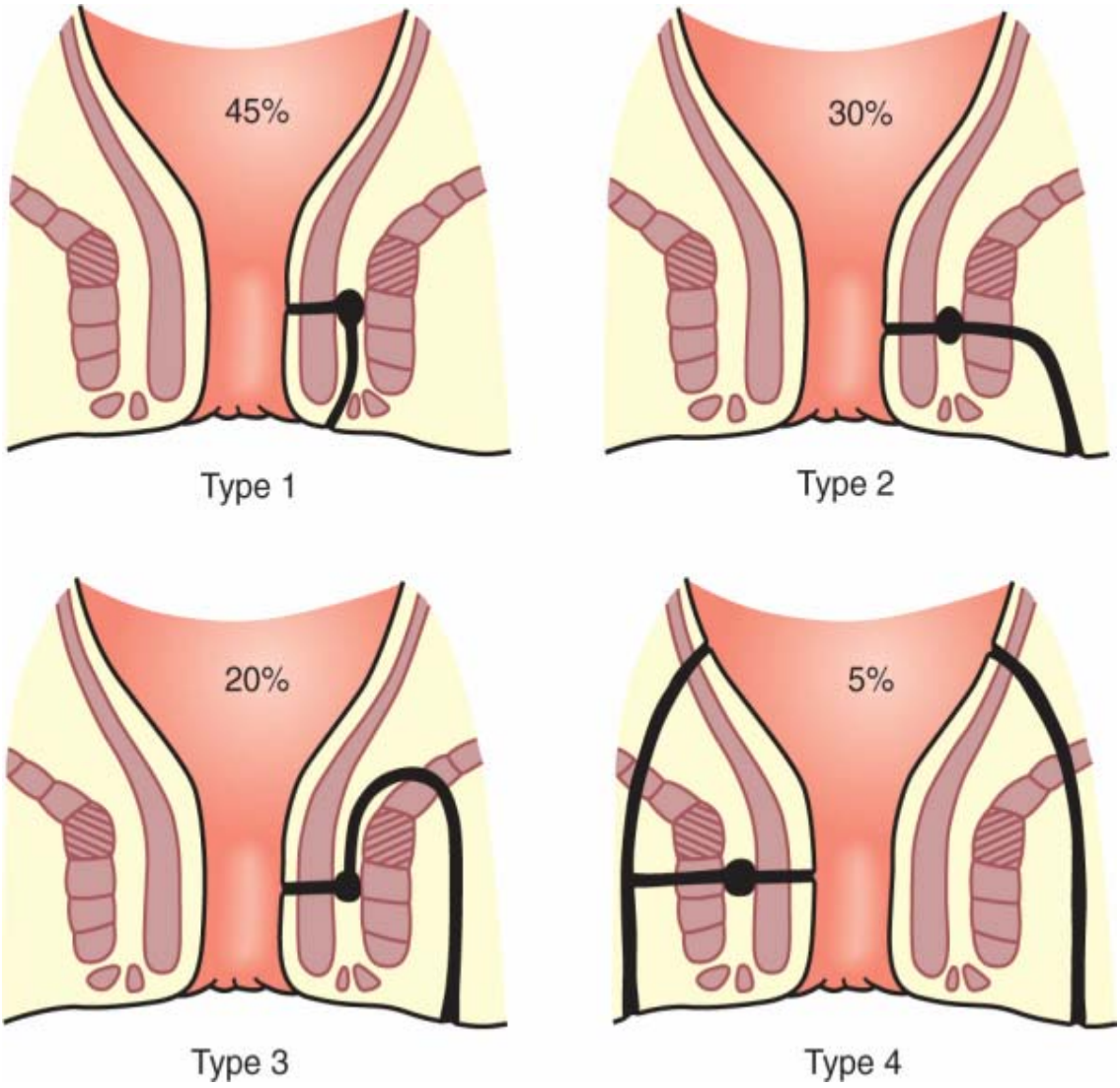


FIG :3 TYPES OF FISTULAE

PARK'S CLASSIFICATION

TYPE:1 INTER SPHINCTERIC FISTULA
TYPE:2 TRANS SPHINCTERIC FISTULA
TYPE:3 SUPRA SPHINCTERIC FISTULA
TYPE:4 EXTRA SPHINCTERIC FISTULA

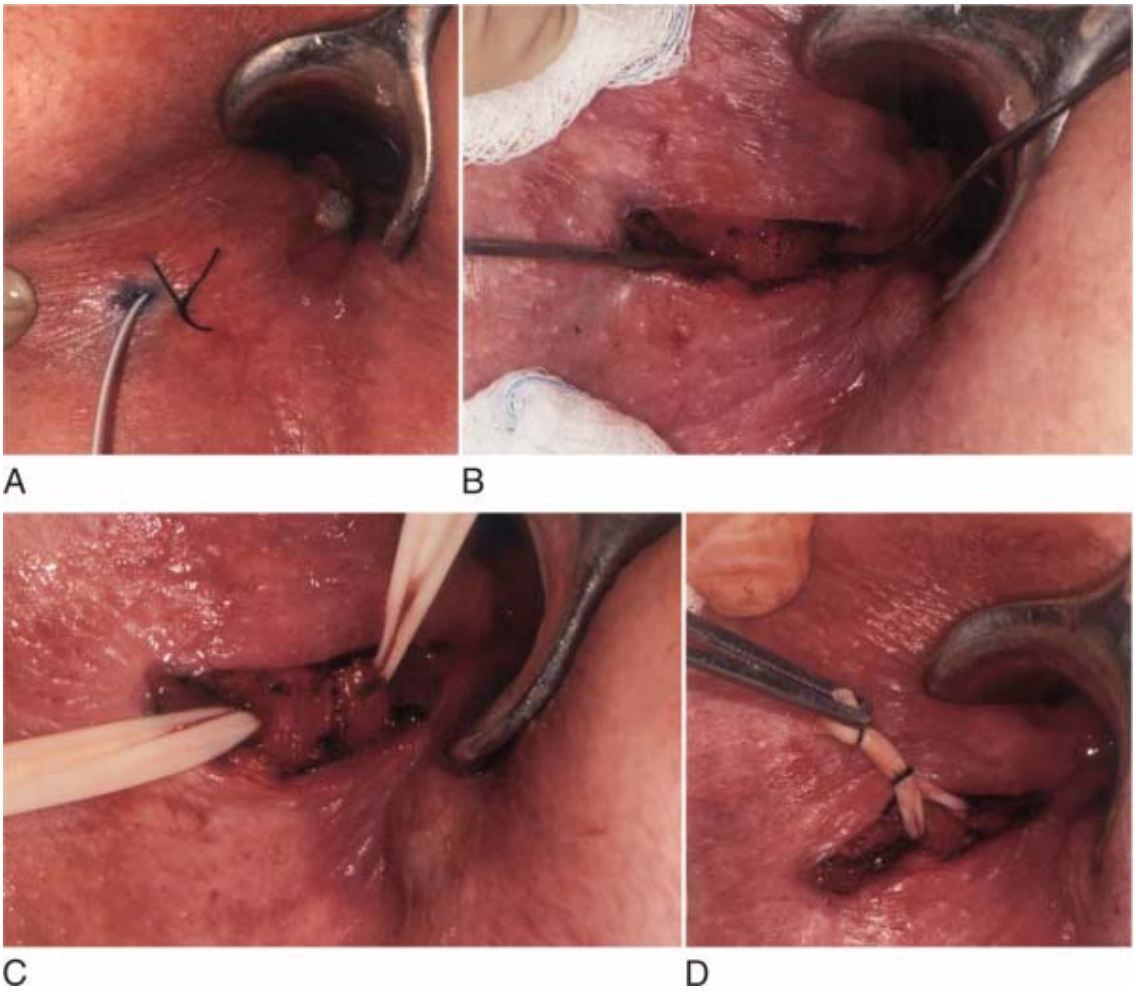


FIG 15 : SETON PLACEMENT

FIG 6: EXTERNAL OPENING OF FISTULA IN ANO

FIG 7: FISTULOUS OPENING [PREVIOUS I&D SCAR SEEN]

FIG 8: A RECURRENT FISTULA with surgical scar

FIG 9: FISTULOGRAM

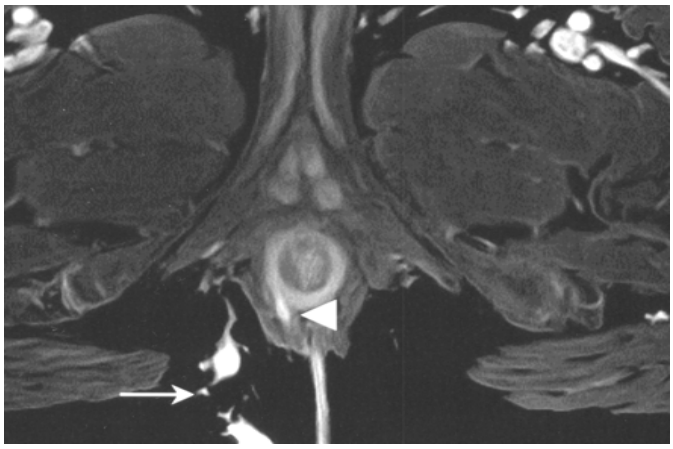


FIG 10: MRI FISTULOGRAM

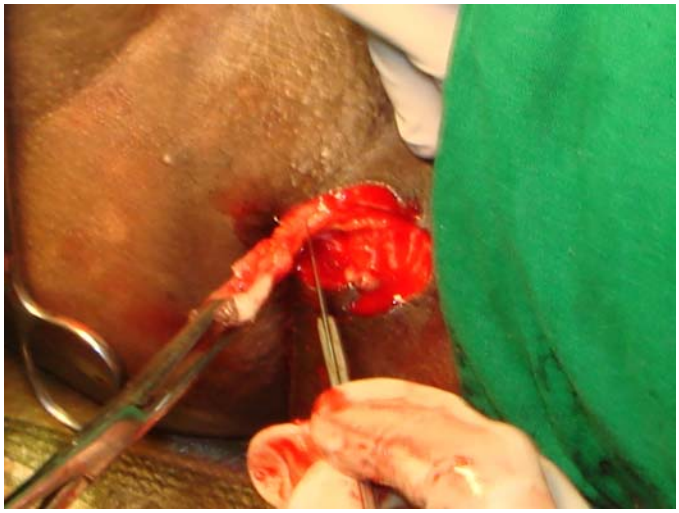


FIG 11 : FISTULECTOMY ON PROGRESSION

FIG 12: Two external openings

FIG 13: Probe inside the outer most opening

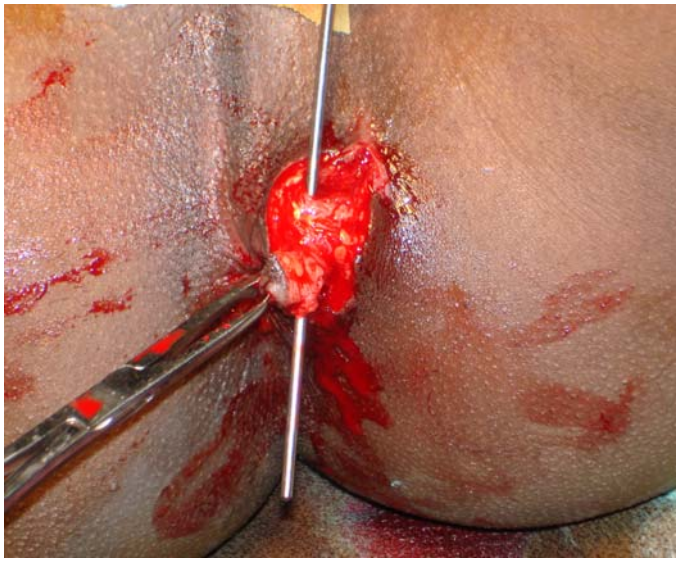
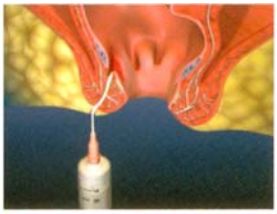


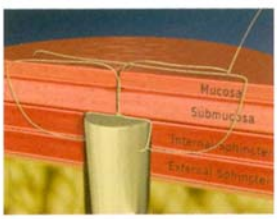
FIG 14: Fistulotomy on progression



1. Irrigation of the tract

2. Surgisis AFP tied the fistula probe.

3. AFP pulled in the internal opening.



4.The internal opening is closed over the AFP

5. Finally tip of AFP sutured to the external opening [which is not closed to allow drainage].

FIG 16: PROCEDURE OF SURGISIS AFP INSERTION

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PROFORMA

Name: Age: Sex: LP. Number:

Address:

Date of Admission: Surgery Unit:

Date of Surgery Date of discharge Presenting symptom and duration:

Previous history of peri-anal abscess- fever- diarrhea-

Prolonged labor in females in the recent past-perineal surgeries-

History of tuberculosis / HIV exposure

History of present illness

1. Discharge: duration- nature:

Periodicity - continuous/intermittent Relation to defecation

2. Swelling: Number: Duration:

Associated with pain- Site-

Associated with discharge

3. Pain Duration- Nature-

Relation to defecation

4. Pruritus

5. Bowel habits: habitual constipation-

Nature of stools

Diarrhea

Alternating constipation and diarrhea

6. Micturition

& other symptoms

Family history of tuberculosis

Inflammatory bowel disease

Colo-rectal malignancies

Personality history: habits- cleanliness- occupation-

CLINICAL EXAMINATION

1. General examination

a. Build- b. Nutritional status-

2. Cardiovascular system: Pulse- Blood pressure-

Cardia-

3. Respiratory system

4. Abdominal Examination:

5. Local examination: Peri-anal-skin Fissure-

External opening: Number Operative scar

Granulation tissue-Relation to the axis-

Discharge from the opening on pressure

Induration: Extent- Course-

Relation to the anao-rectal ring-

Relation to the axis-

Relation to the anal canal

Internal opening-Relation to the ano-rectal ring

Palpable growth in the ano-rectum

Condition of the anal sphincters

Inguinal lymph nodes

Swelling in the perineum

Condition of the prostate

Condition of the pelvic bones

6. Proctoscopy: Condition of the mucus membrane-

Internal opening- Visible growth-

Discharge- Ulcer-Strictures-

Other associated conditions-

7. Probing of the track: course of the track-

Internal opening and its relation to the ano-rectal ring-

8. Sigmoidoscopy: mucus membrane- ulcer-

growth- discharge-

INVESTIGATIONS: Blood: Hb-

WBC Count-Total and differential count

Urine for sugar, protein and microscopy

Chest X-ray

Fistulogram

Biopsy of the fistulous track

Diagnosis

Treatment

Follow-up

Sl. No	Name	Age	Sex	IPM	DOS	Pain	Pruritus	Discharge	H/o abscess	Constipation	Previous surgery	Previous H/o TB	GPF	RS	Perianal skin	No. of ect opening	Granulation	Relation to axis	Discharge	Relation of intering opening to anorch	Relation of track to anonectum	Growth on PK	Intermaalopey on proctoscopy	Track on probing	Treatment
1	Duraisamy	55	M	845898	26-6-06	+	+	+	+				N	N		3		Postr	+	High	High			High	Fistulotomy Antibiotic
2	Anand	44	M	846520	7/7/2006	+	+	+	+				N	N		1		Postr	+	High	High			High	Fistulotomy Antibiotic
3	Selvaraj	65	M	847080	14-7-06	+	+	+	+				N	N		1	+	Ant		Low	Low		Visible	Low	Fistulotomy
4	Chakkaravaaarthy	56	M	847094	12/7/2006	+	+	+	+	+			N	N		1		Postr	+	Low	Low		Visible	Low	Fistulotomy
5	Devaraj	46	M	847908	18-7-06		+	+					N	N		3	+	Postr	+	Low	Low			Low	Fistulectomy
6	Rajan	43	M	848053	22-7-06	+		+	+				N	N		4	+	Postr	+	Low	Low		Visible	Low	ATT
7	Chinnadurai	37	M	848879	3/8/2006	+	+	+	+				N	N		1	+	Postr		Low	Low		Visible	Low	Fistutectomy
8	Lalitha	25	F	845591	2-8-o6	+	+	+	+				N	N		1		Ant	+	Low	Low		Visible	Low	Fistulectomy
9	Gunasekar	35	M	852314	19-8-06		+	+					N	N		3	+	Postr		Low	Low			Low	Fistulectomy
10	Kanniappan	29	M	852899	11/9/2006	+	+	+	+				N	N		1	+	Ant		Low	Low		Visible	Low	Fistulectomy
11	Sivakumar	45	M	855285	25-10-06	+		+					N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
12	Penicilliah	40	M	855690	25-10-06	+	+	+	+				N	N		1		Ant	+	Low	Low		Visible	Low	Fistulectomy
13	Mohd. Basha	35	M	858928	30-11-06	+	+	+	+				N	N		2	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
14	Maangala lakshmi	34	F	859O10	2/12/2006	+	+	+					N	N		1		Ant		Low	Low			Low	Fistulectomy
15	Vennila	28	F	859110	3/12/2006	+	+	+	+				N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
16	Munusamy	42	M	859588	14-12-06	+	+	+	+				N	N		1		Ant		Low	Low			Low	Fistulectomy

17	Tamilselvan	28	M	859593	1/12/2006		+	+					N	N		1	+	Postr	+	Low	High		Visible	High	Seton insertion
18	Arputham	50	M	861509	11/1/2007	+	+	+	+		+		N	N		1	+	Postr	+	Low	Low			Low	Fistulectomy
19	Glory	30	F	860943	24-12-06	+	+	+	+				N	N		1		Ant		Low	Low		Visible	Low	Fistulectomy
20	Balu	52	M	863728	9/2/2007	+	+	+	+	+			N	N		1		Postr	+	Low	Low			Low	Fistulectomy
21	Srinivasan	28	M	864794	20-2-07	+	+	+	+				N	N		1	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
22	Sowrimuthu	54	M	865416	5/2/2007	+	+	+	+	+			N	N		1		Postr		Low	Low			Low	Fistulectomy
23	Perumal	33	M	866814	25-3-07	+	+	+	+				N	N		1	+	Ant		Low	Low		Visible	Low	Fistulectomy
24	Siva	40	M	867032	12/3/2007		+	+					N	N		2	+	Postr	+	High	High			High	Fistulectomy
25	Duraisamy	50	M	872760	23-5-07	+	+	+	+				N	N		1	+	Postr		Low	Low		Visible	Low	Fistulectomy
26	Sankar	35	M	867540	22-3-07	+		+	+		+		N	N		1		Ant		Low	Low		Visible	Low	Fistulectomy
27	Janaki	40	F	864065	17-3-07	+	+	+	+				N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
28	Ponarasan	21	M	871610	10/5/2007		+	+	+				N	N		1	+	Postr	+	Low	Low			Low	Fistulectomy
29	Manohar	46	M	879331	24-8-07	+	+	+	+				N	N		1		Ant		Low	Low		Visible	Low	Fistulectomy
30	Dhanapal (Multiple)	45	M	879822	1/9/2007	+	+	+	+			+	N	N		3		Postr		Low	Low			Low	Biopsy ATT
31	Ellappan	20	M	881688	14-9-07	+	+	+	+				N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
32	Elumalai	48	M	885969	16-11-07	+	+	+	+	+			N	N		4	+	Postr	+	High	High			High	Fistulectomy
33	Manickasamy	55	M	885963	30-11-07		+	+	+				N	N		3	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
34	Anjalai	27	F	868431	5/4/2007	+	+	+	+				N	N		1		Postr	+	Low	Low			Low	Fistulectomy
35	Pappathi	40	F	911188	12/11/2008	+	+	+	+				N	N		1	+	Ant		Low	Low		Visible	Low	Fistulectomy
36	Kanchana	27	F	890557	26-1-08	+	+	+	+				N	N		1		Postr		Low	LOw			Low	Fistulectomy
37	Subramani	42	M	890718	9/2/2008	+	+	+	+		+		N	N		1		Ant		High	High		Visible	High	Fistulectomy

38	Kandasamy	57	M	894916	8/4/2008		+	+	+	+			N	N		1	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
39	Jagadesh	19	M	895750	26-4-08	+	+	+	+				N	N		2	+	Ant		Low	Low		Visible	Low	Fistulectomy
40	Gajendran	35	M	896738	11/5/2008	+	+	+	+				N	N		1	+	Postr		Low	Low		Visible	Low	Fistulectomy
41	Moses	40	M	902615	20-7-08	+	+	+	+	+			N	N		1	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
42	Ellappan	22	M	903335	5/8/2008		+	+					N	N		1	+	Amt	+	Low	Low			Low	Fistulectomy
43	Revathy	33	F	905725	30-7-08	+	+	+	+				N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
44	Sasi	36	M	906044	31-7-08	+	+	+	+				N	N		1		Postr	+	Low	Low		Visible	Low	Fistulectomy
45	Kathararayan	50	M	907501	7/6/2008		+	+	+		+		N	N		2		Ant		High	High			High	Fistulectomy
46	Ramasamy	30		909698	17-6-08		+	+					N	N		1	+	Postr	+	Low	Low		Visible	Low	Fistulectomy
47	Chakkarapani	55	M	907775	18-6-08	+	+	+	+				N	N		1	+	Ant		High	High			High	Fistulectomy
48	Balaji	22	M	910709	6/6/2008	+	+	+	+				N	N		1		Ant	+	Low	Low		Visible	Low	Fistulectomy
49	Rajaji	60	M	889146	20-6-08	+	+	+	+	+			N	N		1		Postr	+	Low	Low			Low	Fistulectomy
50	Aldajkham	42	M	889635	24-6-08			+	+	+		+	N	N		2	+	Postr		Low	Low			Low	Fistulectomy
51	Subramani	46	M	910613	8/8/2008	+	+	+	+				N	N		1		Ant	+	High	High		Visible	High	Fistulectomy
52	Saravanan	30	M	891613	2/8/2008	+	+	+	+				N	N		1	+	Postr		Low	Low			Low	Fistulectomy
53	Samuel	40	M	893769	2/8/2008	+	+	+	+				N	N		1	+	Ant	+	Low	Low		Visible	Low	Fistulectomy
54	Narayanan	53	M	892935	5/8/2008		+	+		+			N	N		1	+	Postr	+	Low	Low		Visible	Low	Fistulotomy
55	Kanthiah (multiple)	50	M	895721	13-7-08		+	+					N	N		3	+	Postr		Low	Low			Low	Fistulectomy

Histopathology
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